

CLAIMS

What is claimed is:

1. A filter for an air conditioner, comprising:
a carbon nanotube,
wherein nano-sized metal particles of at least one type of metal are deposited into the carbon nanotube.
2. The filter of claim 1, wherein the metal particles sterilize the air.
3. The filter of claim 2, wherein the metal particles are selected from the group consisting of silver (Ag), aluminum (Al), copper (Cu), iron (Fe), zinc (Zn), cadmium (Cd), palladium (Pd), rhodium (Rh), and chrome (Cr).
4. The filter as defined in claim 2, wherein the metal particles remove odors from air.
5. The filter as defined in claim 2, wherein the metal particles remove volatile organic compounds from air.
6. The filter of claim 1, wherein the metal particles remove odors from air.
7. The filter of claim 6, wherein the metal particles are selected from the group consisting of titanium oxide (TiO₂), vanadium (V), zinc (Zn), and gold (Au).
8. The filter of claim 1, wherein the metal particles remove volatile organic compounds from air.
9. The filter of claim 8, wherein the metal particles are selected from the group consisting of copper (Cu), platinum (Pt), and nickel (Ni).
10. The filter of claim 8, further comprising nano-sized metal particles that remove odors from the air.

11. The filter of claim 1, wherein the carbon nanotube forms dense layers that adsorb solid particles.

12. A filter for an air conditioner, comprising:
a polymer; and
a carbon nanotube dispersed in the polymer,
wherein nano-sized metal particles of at least one type of metal are deposited into pores of the carbon nanotube.

13. The filter of claim 12, wherein the metal particles sterilize the air.

14. The filter of claim 13, wherein the metal particles are selected from the group consisting of silver (Ag), aluminum (Al), copper (Cu), iron (Fe), zinc (Zn), cadmium (Cd), palladium (Pd), rhodium (Rh), and chrome (Cr).

15. The filter as defined in claim 13, wherein the metal particles remove odors from air.

16. The filter as defined in claim 13, wherein the metal particles remove volatile organic compounds from air.

17. The filter of claim 12, wherein the metal particles remove odors from air.

18. The filter of claim 17, wherein the metal particles are selected from the group consisting of titanium oxide (TiO₂), vanadium (V), zinc (Zn), and gold (Au).

19. The filter of claim 12, wherein the metal particles remove volatile organic compounds from air.

20. The filter of claim 19, wherein the metal particles are selected from the group consisting of copper (Cu), platinum (Pt), and nickel (Ni).

21. The filter of claim 19, further comprising nano-sized metal particles to remove odors from the air.

22. An air cleaner comprising the filter according to claim 1.

23. An air cleaner comprising the filter according to claim 12.

24. An arc-discharge method of forming a filter for an air conditioner using two graphite rods as a cathode and an anode, the method comprising:

forming holes in the cathode graphite rod and filling the holes with specific metal powders that operate to provide air purification;

creating electrical discharge between the cathode graphite rod and the anode graphite rod, wherein carbon clusters separate from the cathode graphite rod and condense on the anode graphite rod, the condensed carbon clusters containing carbon nanotubes; and dispersing the carbon nanotubes in a polymer.

25. A laser vaporization method of forming a filter for an air conditioner, comprising:

heating a reacting furnace to about 1,200°C;

irradiating a graphite target with a laser to vaporize the graphite target, wherein the vaporized graphite condenses on a collector and contains carbon nanotubes and nanoparticles; and

dispersing the carbon nanotubes in a polymer.

26. The laser vaporization method of claim 25, further comprising mixing the graphite target with Ag, Cu, Co, Ni, and Fe to provide a uniform, single-walled carbon nanotube.

27. The laser vaporization method of claim 25, further comprising maintaining a pressure of the reacting furnace at about 500 Torr or less.

28. The filter of claim 1, wherein one or more of the metal particles are selected from the group consisting of nickel to remove volatile organic compounds from the air, silver to sterilize the air, and titanium oxide to deodorize the air.

29. The filter of claim 5, wherein the metal particles are selected from the group consisting of copper (Cu), platinum (Pt), and nickel (Ni).

30. The filter of claim 5, further comprising nano-sized metal particles that remove odors from the air.

31. The filter of claim 4, wherein the metal particles are selected from the group consisting of titanium oxide (TiO_2), vanadium (V), zinc (Zn), and gold (Au).